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MARKETING HEMP

BY

JOHN R. HUMPHREY

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By JOHN R. HUMPHREY

The history of Kentucky, both socially and economically, is so closely intertwined with the hemp industry that there is no agricultural subject which should be of more interest to the farmers of the State than one dealing with the present economic situation in the marketing of hemp fiber. One hundred and forty-four years ago the first crop of hemp seed was raised near Danville and hemp has been raised, both for seed and for fiber, in the Kentucky River bottoms and in the counties comprising the Lexington Limestone area, in varying quantities since that time.

From contemporary writings in journals and newspapers and other publications thruout this period, it appears that the factors controlling the prosperity of the hemp farmer gradually rose to their high point in 1868, and have, in varying degrees of rapidity, subsided since then, resulting in the very low point of production reached in 1919. The actual amount of hemp raised in the world has not varied in any sense in proportion to that raised in Kentucky, but has rather increased since the last century, while production in Kentucky was receding.

It is, therefore, important to the farmers of Kentucky to know the underlying causes of this situation and the discussions in this bulletin of the various problems affecting the hemp industry are based upon an investigation of conditions in Kentucky and other hemp-growing states, and in the chief consuming and exporting markets of the United States. The object of the discussions herein contained is that of bringing to the producer an insight into the true conditions of the industry in the United States and to furnish him with such information as may tend to place American-grown hemp in more effective competition in home markets with that grown in other countries.

1. A REVIEW OF THE INDUSTRY IN KENTUCKY

It is probable that no agricultural product raised in Kentucky has seen a wider fluctuation in market demand than hemp fiber. Varied conditions which are complained of today, such as shortage of labor and unsatisfactory market demand, have recurred from time to time thruout the whole period of hemp production in this State. Opinion seems to prevail at the present time that the hemp industry is a thing of the past and that the stable demand for the fiber has been usurped by other fibers imported from foreign countries. A clearer understanding of the present conditions and of the outlook for the future may be arrived at by a review of the hemp industry in Kentucky during the past 144 years.

Hemp was first introduced into this State by settlers arriving from Virginia and because the fiber is readily available for use in the manufacture of homespun yarns and cloth, it soon became one of the staple agricultural products of the frontier. In this early period of cultivation the art of home craftsmanship was very highly developed by the women of the plantations, and many kinds of cloth, fine laces and linen were eventually manufactured out of hemp. With the coming of the industrial revolution and the introduction of machinery into the weaving of cloth the home art was more or less abandoned and this was especially true after the invention of the cotton gin. Previous to the invention of the cotton gin the manufacture of cotton cloth was very restricted, owing to the difficulty in separating the fiber from the seeds. Altho hemp is widely adaptable to many uses its refractoriness under treatment of machinery soon brought cotton to the front as a very heavy competitor, and the hemp industry quickly declined in favor of cotton-growing in other states, during a period of several years. The growth of the cotton industry in the South, however, at a later date, thru its demand for cotton bagging and bale rope, soon gave the hemp industry in Kentucky a new importance, bringing hemp production to a point far in excess of what had previously been practist.

About this time there was also a great demand for hemp fiber in the Eastern cordage plants where it was used for the manufacture of rope for the standing rigging of ships and in providing sailcloth similar to cotton duck. In 1864 cotton rose to a relatively high price, much higher per pound than cotton bagging and bale rope which were composed of hemp, and for that reason it became advantageous for cotton ginners to overload their bales with the hemp product. As a result of this the amount of cotton bagging to be used was restricted by manufacturers of cotton goods and demand arose for steel straps to take the place of the ordinary bale rope. Thru this unfortunate circumstance hemp once more lost a wide market. On account of the quicker transit by steamships over sailing vessels India jute was introduced into the United States, and because of its cheapness in comparison with hemp, soon displaced hemp in cotton bagging, and furthermore, the increasing use of steamships greatly reduced the quantity of hemp used in the manufacture of rigging and sailcloth.

The manufacture of hemp products had risen to a point during this period sufficient to require an investment of $500,000 capital in Lexington and an equal amount in other parts of the State, in rope walks and mills where rope, cotton bagging, sailcloth and hemp linen were manufactured. There was also a political phase to the hemp industry at this time; so much so that Henry Clay devoted a great deal of his time and attention to tariffs on foreign hemp, for the protection of Kentucky manufacturers, but contrary to the expectations of these manufacturers the price of hemp products was less after the imposition of the tariff than before its introduction. Russia, the greatest hemp-producing country in the world, continued to be a very heavy competitor with Kentucky and the imposition of the tariff tended to destroy the shipbuilding industry of New England and to drive this industry to England and other European countries during the remainder of the period of decline of building sail ships.

Hence, again in the evolution of the hemp industry, new markets were necessary and it was after this juncture in the history of hemp raising and manufacture that the present uses

of hemp came into prominence and have been maintained more or less steadily up to the present time. Altho Russian hemp was an early and serious competitor of the Kentucky product it is today imported very lightly, but Italian hemp, water retted in the alkali streams flowing thru the lava beds of that country and consequently lighter in color and finer in quality than the dew retted fiber of Kentucky, is now the ruling factor of competition in the hemp market.

The history of the hemp industry leads to the inevitable conclusion that its instability has not been caused by flaws in the cultural side of the question but rather is inherent in those factors which control the marketing of the fiber. The process of retting might be improved by experimentation but the introduction of power machinery and improvements in the manner of breaking, together with the stabilization of demand, which may be brought about by introducing powerful industrial concerns at home, are the three problems which, if solved, would again make the raising of hemp in Kentucky a profitable agricultural undertaking. With an average production of over 1000 pounds of hemp fiber per acre and the proper machinery for harvesting and breaking, hemp should be one of the most profitable crops suitable for culture in the Bluegrass section of the State and, furthermore, should require no more labor in its handling than is devoted to the culture of corn, wheat or other machine-handled products.

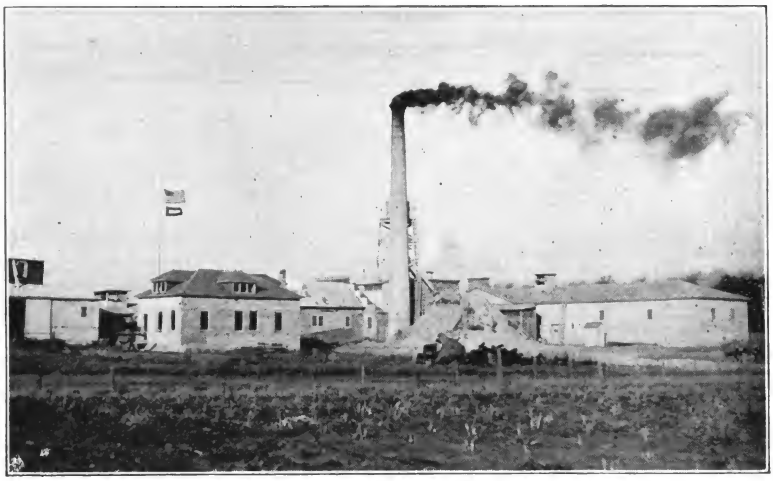
On account of the high prices and the introduction of improved machinery for handling hemp in other parts of the country there has been a constant trend during the last eight or ten years toward the expansion of hemp raising in other States. California, Wisconsin, Indiana and Ohio now produce collectively more hemp than is produced in Kentucky in a favorable year and the industry in Wisconsin, Ohio and Indiana has been stabilized by the erection of breaking plants for the production of long line fiber and tow by machine process, while most of Kentucky's fiber is still prepared by hand labor.

2. METHODS OF PREPARATION FOR MARKET

Methods Pursued in Kentucky. The influence of methods of marketing and preparation of products upon their adaptability to use and upon the demand for those products in the market has such a wide bearing upon the prosperity of any industry and especially on that of hemp production that more care should be exercised in this direction than has usually been thought necessary.

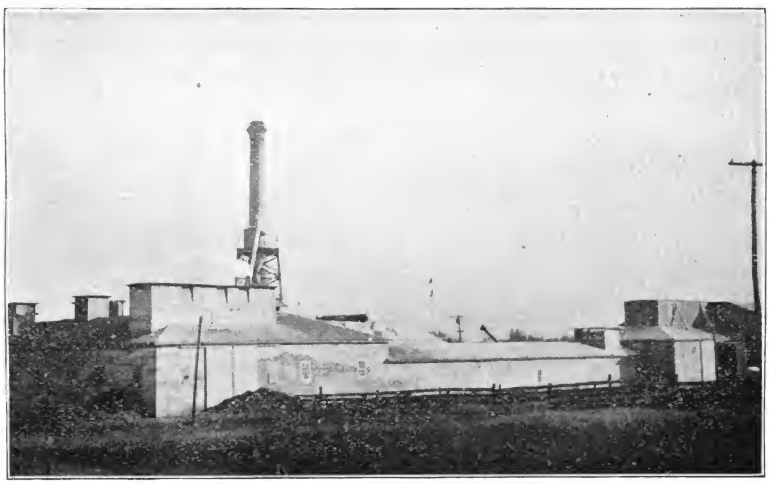
Thruout the period of hemp production in the United States hundreds of patents on hemp-breaking machinery and on methods of treating hemp fiber in order that it might become more tractable under machine spinning have been issued, but for various reasons in the past they have seemed to produce very little effect upon the prosperity of the hemp producer. Hemp-breaking machinery has usually been crude and preparations for retting or bleaching hemp have most often injured the fiber in the process. The hemp raisers of Kentucky, in conformity with those in the eastern part of the United States, still maintain the use of the simple hand brake which, during the periods of ample labor supply, appeared to serve the purpose satisfactorily. The use of the hand brake, however, requires an undue amount of retting in order that the power supplied by hand may be capable of properly cleaning the hurds from the fiber, and this excess amount of retting has tended to darken and coarsen the fiber produced in this State and at the present time its use is very unsatisfactory because of the labor shortage and the unreliability of the weather in the breaking season. Moreover, it cannot be said that the proper reliance can be placed upon hand labor to properly clean the hemp fiber, in view of the fact that it is broken out by the pound and the addition of the maximum amount of hurds is greatly to the advantage of the breaker. The combination of over-retting, coarse fiber, excess amount of dirt and uneven quality of Kentucky hemp are tending gradually to displace it from the more desirable uses in the manufacturing field and to allow its replacement by fibers produced in other States and handled by machinery.

Adaptability of Machinery to the Preparation of Hemp Fiber. Nearly all of the methods of breaking hemp by machinery spoken of above have failed because most of these machines were mere toys in size and not sufficiently strong to do the work, while at the same time the inventors have attempted to make these machines available for use in the fields where the hemp is grown. After the expenditure of large sums of money by manufacturers these methods have proved unsatisfactory, but hemp-breaking plants of another character are in very successful operation in Wisconsin and Indiana. A hemp-breaking plant capable of breaking 15,000 pounds of



A modern hemp mill capable of breaking, cleaning and baling 15,000 pounds of line and tow per day. Hemp hurds are used for fuel and supply power for running the machinery and drying the hemp stalks as they pass thru the dry kiln.

hemp fiber per day requires an investment of from $25,000 to $50,000 and should be located in the center of a hemp-producing area where the fields are within a radius of 15 miles of the plant. The plant is constructed with ample storage space for a supply of hemp stalks, a dry kiln for conditioning the hemp for breaking, a machine room and a storage house for baled fiber. The machinery consists of a hemp brake of ample strength and capacity and power scutchers, balers, conveyors



Another view of a hemp mill showing the dry kiln, the low shed-like structure, in which the hemp is conditioned for breaking.

and other minor machinery, all of which are protected from wind and weather, two of the greatest hindrances to open-air power hemp-breaking. Power is furnished by steam produced by using part of the hurds for fuel. With this equipment hemp fiber of very high quality is secured and the dangers of over-retting are thus done away with by the ability of power breakers to break out hemp of any degree of retting.

The preparation of hemp for market by the farmers under these conditions is accomplished by the use of hemp harvesters and the hemp gather-binder which requires only a small amount of man labor in comparison with that now expended, the hemp stalks being tied in bundles ready for hauling to market at any time after gathering. The power hemp-breaking plant is capable of operation thruout the year in any kind of weather and farmers are able to market their hemp stalks at the most advantageous time to them.

The price paid for hemp fiber in other States using hemp-breaking machinery properly installed in a hemp-breaking plant is slightly higher in the stalk than now paid Kentucky farmers by the dealers for broken fiber. The introduction of

machinery, therefore, is a great economic advantage to the farmer because it has eliminated the strain on the labor supply, while at the same time producing a gross revenue equal to, if not greater than, that now received, and a comparative net revenue nearly four cents per pound in advance of the present price in Kentucky.

Cost of Preparation. The cost of preparing hemp for market by hand is considerably in excess of that expended thru the use of machinery because of the excess amount of hand labor which is required thruout the process of preparation for hand breaking. The cost of actual breaking by hand or machinery is not so widely different, but the improved quality of the product, with consequent better demand, resulting in a ready market to the farmer, when coupled with the elimination of labor costs in preparation for hand breaking, at once shows the desirability of improving practises in hemp marketing in Kentucky.

3. MARKETING METHODS

Local Conditions. The preparation of hemp fiber for the consuming market having continually been a farm industry, the marketing of the product is not participated in by the farmers, except as a local transaction. Hemp breaking, as a commercial industry, has never been established within the State; consequently, the marketing of Kentucky hemp has, until very recently, been entirely in the hands of middlemen known as hemp dealers located at various points within the hemp-raising territory and these dealers have constituted the only market in which the farmers could dispose of their crops.

There is probably no crop which the farmer raises upon which he has so little information regarding price levels, points of consumption and uses, as is the case with hemp, and this condition has been generally brought about by the exclusion of the farmer from contact with any but the local market and the absence of price quotations on hemp, such as are commonly given on live stock and other products. It has, therefore, been unsatisfactory to the farmer to raise a crop con-

A modern hemp harvester cutting and spreading hemp ready for retting.

cerning whose uses he knew little and finally to place it upon the market without knowing whether the price offered was the price current or a local quotation.

Advantages of Co-operative Marketing in the Hemp Industry. An experiment was carried out during the selling season of 1917 with the intention of testing out the comparative advantages of cooperative sales of hemp between the farmer and the manufacturer. Farmers' hemp associations were formed in ten counties for the purpose of grading, baling and storing the fiber at local points. Each of the ten counties then elected a representative to a central association, the duties of which were to inspect and sell the fiber. Investigations of the Experiment Station in the terminal markets produced considerable information respecting methods of sale and available outlets. It resulted that the mills were not in favor of buying hemp directly from the individual farmers on account of the added expense entailed and the lack of reliable information regarding the shipper. Hemp being a product which, up to the present time,

has been bought mainly upon inspection backed by the integrity of the seller, the mills were not willing to make purchases on samples from the farmers. To avoid this difficulty several local hemp associations agreed to sell their hemp thru a single agent, upon a commission basis, the agent to be responsible for the grading, selling and collection. The experiment was successful in that it produced an added revenue of several thousand dollars to the farmers participating, but the extent to which the experiment was carried out is not sufficient to establish cooperative hemp sales upon a permanent basis. Only two counties out of the ten sold practically all of their hemp by this arrangement; the other eight, profiting by stabilization of prices produced by the hemp association, eventually sold their hemp to local dealers. In any event, under the existing circumstances, it became impracticable to sell all the hemp produced in Kentucky thru the association unless the association was equipped with facilities for dressing hemp and tow, a condition which did not exist at any time during the year. Hence the sales of hemp which were made were carried out on a basis of raw or undressed hemp. The experiment was chiefly valuable in its indication of the possibility of profitable hemp marketing which might be brought about by proper stabilization of grades and standardization of processes of preparing fiber for market.

That the hemp industry would eventually benefit greatly by an extended organization of the producers, with a stable marketing agency, is borne out by the fact that the producers of Russia have, since 1915, banded themselves together in an Artel, or producers' association, carried out upon practically the same lines as those employed in Kentucky in 1917; this system, having produced very beneficial results in Russia up to 1916, is based upon the same organization which now markets the bulk of the world's flax crop produced in the same country.

European Methods. As stated above, a large proportion of the hemp crop of Russia is marketed thru the hemp producers' cooperative associations, which associations under-

The hemp gather-binder which picks up the stalks after retting and binds them into bundles ready for delivery to the power breaking plant.

take the sale of the hemp and make advances on fiber as delivered, afterwards grading and baling the hemp and placing it in transit. Most of the Russian hemp is sold in European countries, especially England, hence very little comes in dircet competition with American fiber. Italian grown hemp is produced on small farms and sold by individuals to dealers in Italy who, up to the present time, have resold the fiber to English merchants who, in turn, have forwarded it to American manufacturers, usually at greatly increased prices. The prices of Russian and Italian hemp at seaboard in the United States are about equal, at the present time, and the trend of circumstances in both of those countries, consequent upon the scarcity in the labor supply and the disruption of the industry in general, presages an advanced price on fiber over that prevailing previous to the war.

The Situation in Consuming Markets. The chief consuming textile markets of the United States are situated along the Atlantic seaboard where they early became established on account of the close proximity of great industrial centers and

the shipbuilding trade. The trade in all fibers, including hemp, is largely handled thru the medium of fiber brokers who are in close touch with manufacturers. A large proportion of sales is made direct between Kentucky buyers and mills, but almost none, except in the association sales of 1917, have ever been effected between growers and mills.

The establishing of hemp breaking on a commercial basis thru the employment of power plants and the consequent evener grading of Kentucky hemp should bring about closer commercial relations between producer and consumer and tend to establish the quality and price of Kentucky grown fiber on a firmer basis.

4. GRADING AND MARKET STANDARDS

Conditions in the United States. No official grades have been established in the United States for American grown hemp and for this reason the producers are under great handicap with respect to marketing their fiber. The trade has roughly divided Kentucky hemp into several not well defined grades and this condition allows of individual judgment in the matter. The grades under which Kentucky rough hemp is commonly sold are No. 1 Kentucky rough prime, No. 2 Kentucky rough prime, No. 1 tow, and No. 2 tow, while a fifth grade is reserved for tangled and matted fiber mixed with considerable dirt and shives.

Dressed hemp is quoted under grades known as single and double dressed, and double double dressed for long fiber, and single and double dressed tow for shorter fiber. The difficulty in marketing under these grades arises from the fact that the grades are not sharply defined, allowing a variation in any one of the grades from year to year in accordance with the judgment of the party placing the fiber on the market or of the buyer. Because of this condition manufacturers are not inclined to make quotations on grade or description and the process of selling hemp reverts to one of bargaining between buyer and seller.

Showing the method of stacking the hemp as it is delivered for breaking.

American hemp is staple enough in character, however, to allow great improvement in the particular of grades and standards and this can be brought about by one of several methods. Agreements between producers in an association, or thru regulations set forth by consuming factors in the market, or, still better, by improved treatment of the fiber by machinery, and hence more uniform quality, may be the methods best adapted to various communities.

Wherever hemp breaking plants have been established, thus bringing together the hemp producing area in one central marketing institution, there has been a noticeable widening of demand and a tendency toward better market levels, but even this advance in hemp marketing could be greatly aided by establishing hemp grades on a firmer basis. It is certain that the American hemp industry will not become stablized until something of this nature has taken place, and the truth of this assertion is evidenced by results obtained in other parts of the world thru the promulgation of standard fiber grades.

Standards in Manila Hemp. In order to promote the Abaca fiber industry in the Philippines a law was passed by

the Philippine government setting forth the grades for Abaca fiber and defining the rules and regulations for its handling, storing and grading, and setting forth aids for its introduction into commerce. The result of this law has been that buyers in the United States and elsewhere are now enabled to purchase fiber in Manila with some assurance that it will be representative of the marks under which it is purchased. The growers of Manila fiber, of course, were not as well acquainted with American institutions as are the growers of American hemp and it was found impossible to purchase fiber from the Philippines without some regulation of the trade. The immense advance which has taken place in the industry and the widening of demand for Manila fiber since the introduction of standard grades is an indication of the benefits which would accrue to American hemp under like favorable conditions.

European Regulations. Hemp grades are fairly well established in most of the producing countries of Europe. The advance in this direction has not been as marked in Russia, up to the present time, as it bids fair to be in the future. In 1914, Russian hemp producers were beginning the formation of a cooperative hemp handling industry and had outlined plans for grading and marketing their hemp which were far in advance of those in use at that time. The greatest advance in grading in Europe has probably been that which has taken place in Italy, where we find that hemp is divided into six grades known as good, good medium, medium, poor, bad, refuse and tow. The grades are further subdivided in accordance with the locality, different localities producing variable qualities of fiber. These grades are such as good Bologna, good Bondino, good medium Bologna and good Ferrara. The medium, poor and bad are usually classed as of all localities, no distinction being made between areas of production. Each of the above grades is then thoroly defined under such qualifying definitions as "Raw hemp of Bologna, Bondino, Finale, Cento, Ferrara, Romagna, and Polesine is understood as free from the usual refuse (decay, black, etc.)." Thus the Italian grower

Interior view showing long line hemp fiber as it comes from the scutcher. The power baler is shown in the background.

is enabled to place his samples in the hands of foreign buyers on a much higher commercial basis and at better advantage than the American grower, and this, aside from the fact that Italian hemp may be of exceptionally high quality, allows of readier sale than can be obtained for American hemp under present grading conditions. Nearly all foreign fibers are sold under a mark which signifies a guaranty of quality upon which the buyer can rely.

5. USES OF HEMP IN THE UNITED STATES

In considering the uses of hemp at the present time, it is necessary to take into consideration the two limiting factors of comparative price and the peculiar qualities of the fiber. American hemp finds its chief use, under modern conditions, in the manufacture of commercial twine and small cordage, thread, hemp carpet twines, oakum and marlins. Prominent manufacturers of harvester twine have carried out extensive experiments in its use in that product and report that during the past year 1000 tons of long line hemp fiber were thus consumed. Samples of this twine, which is of single strand,

dressed with tar, have given very satisfactory results, both as to strength and wearing qualities, and, could this market be captured for hemp, the present supplies of hemp fiber would be inadequate to fill it. Italian hemp finds its most extensive use in the manufacture of coarse cloth and certain grades of thread, while Russian, to a small extent, is imported for the same use as American.

The limited uses of the several kinds practically define demand, and a shortage of other fibers than American hemp during the war brought this feature out sharply. For instance, the scarcity of jute did not produce any marked effect upon the market, since the uses of jute require fiber less expensive than hemp, nor did the shortage of Italian hemp or Abaca fiber greatly increase the demand for American, since the American fiber is not as well suited to the uses of the former.

An expansion of the field for American hemp manufacture is quite possible thru raising the quality of American fiber and thru ability to produce hemp fiber profitably at a less price per pound. The gradual rise in the price of competing fibers has tended to bring about an expansion of the use of hemp without an actual reduction in price. Considerable limitation is placed upon hemp demand thru the shortage of hemp fiber machinery, a condition which has been brought about by the competition of other fibers and the almost total disappearance of American fiber from the market in 1915. The revival of wooden ship building is tending to give a wider field for the use of hemp tow in the manufacture of marlins and oakum and its use in thread and binder twine, when of the proper quality, presages an increase in the number of tons of hemp required annually hereafter.

In 1913, the last year previous to the war, there were imported from Italy 5,088 tons of hemp, at an average price of 10.08 cents per lb., from Russia, 1,280 tons, averaging 8.68 cents per lb., while the United States produced 5,100 tons which sold at an average of about 9 cents per lb. Statistics on imports show that during the past three years imports have been above the average. In 1916, 6,506 long tons were

imported, at an average cost of 11.27 cents per lb. In 1917, imports rose to 9,635 long tons costing 11.52 cents per lb., and again subsided in 1918, to 6,913 long tons at an average of 18 cents per lb. The amount of hemp used in the country has been practically constant for several years, amounting to from 11,000 to 15,000 tons per year, with a fluctuation during the war period to approximately 18,000 tons, due to the shortage of other fibers and their relatively high price.

6. EXPORT OUTLOOK

The outlook for export of American production of hemp fiber is not clear at the present time. In spite of the fact that conditions in Russia are much disturbed and that that country continues to be handicapped in the world's markets it remains to be seen whether or not the revolution will materially affect the peasants in the production of hemp. Under the Empire every peasant in the hemp producing area was required to raise a certain amount of hemp and it is not known whether the agricultural forces of that country will voluntarily produce a like amount in the future. Areas producing hemp in Russia are so vast that it is likely that a great deal of the fiber will be produced even under adverse conditions. During 1917, Kentucky produced something like 18,000 acres which, when compared with the 515,000 acres produced in the four principal governments of Russia, is an insignificant part of the world's production. The chief country to which America could look for export of hemp is England, and since Russia is the former source of supply of that country, and further considering that India, an English colony, produces large supplies of fiber with cheap labor, it is not likely that under normal conditions America can find a market in England, in competition with other countries.

Some inquiry has been received from English importers during the past year for American fiber, but shipping conditions were not such as would allow of free exportation and only a small amount of fiber has been sent out of the country. For possibly two years after the end of the war an increased

export demand will be felt for American fiber. The natural processes of recovery in the war-torn countries usually first take effect upon agriculture and it is doubtless true that Russian, Indian, Italian and Hungarian producers will succeed in filling the foreign market within the next three years, beyond the advantage of the American farmer. Proper organization of the home market, however, will absorb the entire production of Kentucky and will no doubt be more profitable to Kentucky producers than competition in the export market.

7. THE FUTURE OF THE HEMP INDUSTRY

The Bluegrass section of Kentucky is the natural hemp-producing area of the United States and, with the possible exception of tobacco, the raising of hemp seems to be the least affected by the law of decreasing returns. The early settlers of Kentucky soon found that the good climate and fertility of the soil on the Lexington limestone plateau would produce a greater profit in hemp than in any other commodity, but the discovery of Burley tobacco has upset this relation to some extent. Granting that thru experience the central Bluegrass region has been found to be peculiarly adapted to hemp culture and knowing that hemp will be raised to some extent in the United States in the years to come, even under the present disadvantageous methods of marketing, it appears that more advantages can be obtained by raising hemp in Kentucky than in any other state.

In the discussions in this bulletin, so far, the possibilities of hemp raising for hemp fiber only have been treated and very little stress has been laid upon better processes of retting or treating fiber by chemical processes. It does not seem that the solution of hemp raising as a profitable industry lies in better methods of retting or in artificial treatment of the fiber but rather in a modern spirit of commercialism in the preparation of the fiber for market. The latent industrial possibilities which become apparent when considering a centralized hemp-breaking plant were never available under the old method of

breaking hemp in the fields at widely scattered points. In the operation of a centralized plant great quantities of hurds broken out of the hemp are produced and these, as previously stated, in part are used as fuel for the operation of the plant. There is, however, a relatively large surplus of this material left on hand as refuse, which might be used for the creation of a great amount of additional power, practically without cost, and this power could be used by other industrial concerns, thus producing a revenue to the hemp plant, and hence a higher price to the farmer for his fiber. The ashes obtained from the burning of hemp hurds contain nearly 20 per cent. of pure potash, the percentage varying with the degree of retting; aside from other minerals and by chemical process this may be recovered, either for use as fertilier on the farms or for the manufacture of soap or other products. By chemical treatment the hurds may be freed of all other mineral substances, with the resultant product composed of nearly pure cellulose, thus making them available for manufacture of other products valuable in commerce.

By the application of scientific treatment to the hemp industry there is a possibility of increasing the importance of hemp as an agricultural product by utilizing these by-products, as has been the case in the concentration of the meat industry in the great packing plants, and as is true in cotton growing since methods have been found for utilizing the seeds which formerly went to waste.

In conclusion it may be said that the future of the hemp industry depends largely upon the relative price of other farm products and upon the state of organization within the industry itself, and that the present unsatisfactory position of hemp in the market is susceptible of vast improvement by careful consideration of the changes brought about by modern conditions.